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14. ABSTRACT The Security Cooperation Teams (SC Teams) operating in Africa are confronted with severe and life threatening endemic diseases, poor host nation medical support, and austere environmental conditions. The standard organic Marine Corps medical first responder, an Independent Duty Corpsman (IDC) or General Duty Hospital Corpsman lacks the training experience and reach back capability to treat the hazardous medical conditions that are common in the countries of Africa. The importance of deploying the right Health Service capabilities, in support of the SC Teams, will significantly contribute to the success of the team as it develops partnership nations, contributes to capacity building, and ultimately maximizes security efforts throughout the operating countries in Africa. Additionally, the intent is to mitigate the deploying force's reliance on sub-standard Host Nation health care while reducing the risks of forces contracting African endemic diseases.					
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MASTER OF MILITARY STUDIES

THE LONG WAR CONCEPT – DETERMINING THE RIGHT HEALTH SERVICE SUPPORT
CAPABILITIES FOR THE SPECIAL PURPOSE MAGTF (SP MAGTF) – (SECURITY
COOPERATION) OPERATING IN AFRICA

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

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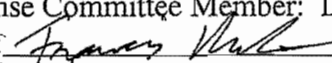
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Preface

The operating environments of sub-Saharan African countries contain numerous endemic diseases which can easily disrupt operations and reduce the effectiveness of the forces. The main purpose of this research is to outline the importance of having a physician with tropical medicine training assigned to the Marine forces operating in Africa despite the size of the force. In most instances, a single General Duty Corpsman or an Independent Duty Corpsman will be assigned to provide medical care for small teams of Marines operating in places all over the globe.

General Duty Corpsmen and Independent Duty Corpsmen are a valuable medical capability, but the African sub-Saharan countries present unique medical challenges that exceed the capabilities of corpsmen, and therefore, a physician is required to adequately care for the forces operating in the medically austere environment of Africa. This research was developed to convince the AFRICOM Combatant Command that having a physician with tropical medicine training on every mission set in sub-Saharan Africa is imperative to the success of each mission.

I would like to thank my research mentor Dr. Rebecca Johnson, Marine Corps University Staff, for her exceptional guidance and direction while preparing this research paper. Dr. Johnson's oversight and assistance during the research was invaluable to completing the paper. I would also like to thank the medical planner from Marine Forces Africa, LT James Nogle, and the Officer in Charge, Surface Warfare Medicine Institute (SWMI), Captain Steven Banks, for providing advice and coordinating the technical information required to support the research. Last, I would like to thank my family for exercising patience while I conducted the research for this paper, and for the times I did not spend with my family while drafting the research paper, I intend to make it up to them.

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EXECUTIVE SUMMARY

Title: The Long War Concept – Determining the right Health Service Support capabilities for the SC MAGTF operating in Africa.

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Thesis: Sub-Saharan African countries present many dangerous health related diseases that can affect the overall health of Security Cooperation Teams (SC Teams) operating in Africa. Therefore, a board certified physician with tropical medicine training is the appropriate clinical competent medical authority that should be assigned to support the SC Team, and preserve the combat effectiveness of the team.

Discussion: The Security Cooperation Teams (SC Teams) operating in Africa are confronted with severe and life threatening endemic diseases, poor host nation medical support, and austere environmental conditions. The standard organic Marine Corps medical first responder, an Independent Duty Corpsman (IDC) or General Duty Hospital Corpsman lacks the training experience and reach back capability to treat the hazardous medical conditions that are common in the countries of Africa. This research will focus on the importance of deploying a physician capability with a robust preventative medicine and environmental clinical skill set as opposed to a general duty corpsman or Independent Duty Corpsman capability in support of the SC Teams. The importance of deploying the right Health Service capabilities, in support of the SC Teams, will significantly contribute to the success of the team as it develops partnership nations, contributes to capacity building, and ultimately maximizes security efforts throughout the operating countries in Africa. Additionally, the intent is to mitigate the deploying force's reliance on sub-standard Host Nation health care while reducing the risks of forces contracting African endemic diseases.

Conclusion: A first responder general duty corpsman and/or an IDC is a valuable medical enhancement to the construct of a Health Service Support detachment supporting a SC Team deployed to Africa, but the skill sets of a physician is imperative to adequately support the medical considerations a SC Team will encounter while operating in sub-Saharan Africa countries.

INTRODUCTION

Saharan African countries present significant medical challenges to the Security Cooperation Team operating in the region. Endemic diseases alone create a significant challenge to basic trained medical personnel in support of the SC Teams. Host Nation capabilities are referenced in numerous health service support analysis as being continuously below U.S. standards and are considered inadequate for U.S. forces operating in many, if not all, sub-Saharan African countries. Marine Corps SC Teams conducting Security Cooperation efforts deploy to African countries in support of AFRICOM's Theater Security Cooperation (TSC) initiatives with a basic "first responder" capability. The SC teams are continuously exposed to African endemic diseases that far exceed the clinical diagnoses and treatment regiment capability of a general duty corpsman and marginally exceed the capabilities of an Independent Duty Corpsman as "first responders."

When a Marine in sub-Saharan Africa sustains a severe injury or contracts a life threatening disease through exposure, the conditions may warrant a Medical Evacuation (MEDEVAC). The medical personnel assigned to a SC Team must have the proper clinical skills sets to sustain the life of the Marine until the MEDEVAC arrives; on average that is between 24 and 72 hours due to the distances in Africa and preparation time to deploy a MEDEVAC. Additionally, the cost of a MEDEVAC from sub-Saharan Africa to Landstuhl, Military Treatment Facility (MTF) in Germany, can range from \$100,000 for limited care and \$150,000 for critical care according to the Regional Program Director, International SOS (ISOS). International SOS is a private medical evacuation company contracted by the military through TRICARE Europe.¹ Due to competing OEF & OIF requirements for military aircraft, and the time it takes a military MEDEVAC to reach sub-Saharan Africa, approximately four days for a

routine MEDEVAC, MEDEVACs are typically deferred to ISOS for the mission. ISOS MEDEVACs can arrive in many of the sub-Saharan African countries within 24 to 48 hours.²

In most sub-Saharan African countries, an endemic disease created by a simple mosquito can present forces with dangers such as contracting Plasmodium Falciparum (P-Falciparum). P-Falciparum is the most severe form of malaria and can still be contracted despite the forces being on an approved anti-malarial treatment regiment; and without proper diagnosis, treatment, and skilled clinical oversight, it is plausible for an individual to die prior to a MEDEVAC arriving.

This paper will answer two questions. First, is the deployment of an Independent Duty Corpsman or a basic Fleet Marine Force corpsman as a “first responder” an adequate Health Service Support capability to provide knowledgeable and intense Force Health Protection measures for the SC Team operating in Africa? Second: Does a first responder have the ability to provide accurate clinical diagnosis for the SC Team members contracting diseases while operating in the austere and environmental medically endemic challenging countries of Africa?

Sub-Saharan African countries present many dangerous health related diseases that can affect the overall health of Security Cooperation Teams (SC Teams). Therefore, a board certified physician with tropical medicine training is the appropriate clinical competent medical authority that should be assigned to support the SC Team, and preserve the combat effectiveness of the team.

The following roadmap is provided in sections. Section 2 will provide a brief overview of the Long War Concept and how the Special Purpose Marine Air Ground Task Force (SP MAGT) – Security Cooperation fits into the concept the Long War. Section 3 will discuss the importance of a having a physician capability with tropical and preventative medicine skills assigned to the SP MAGTF Security Cooperation Teams vice having a general duty or

Independent Duty Corpsman. Section 4 outlines the importance of strict Force Health Protection requirements for the SC Teams operating in Africa. This section will also outline a case study of a Navy Seabee's death from malaria in Liberia, to highlight the importance of having the right medical capability with the correct skill sets to medically diagnose, manage contracted endemic diseases, and provide comprehensive Force Health Protection oversight. Section 5 is the conclusion; a wrap-up of all the sections, and a provided recommendation for protecting the health of the SC Teams by task organizing the right HSS capability for future deployments to Africa.

OVERVIEW OF THE LONG WAR CONCEPT AND THE SP MAGTF OPERATING IN AFRICA

The importance of providing a brief overview of the Long War Concept is to set the conditions of how the two questions presented in the introduction came about, and why this author that having the correct Health Service Support capability to protect the SC Teams or detachments operating on the continent of Africa is imperative to protecting the medical readiness and effectiveness of Marines conducting Security Cooperation.

Winning the Long War is one of the five objectives defined under the strategic framework outlined in the National Defense Strategy (NDS) and the National Security Strategy (NSS) of 2008. The intent of the five objectives is to provide enduring security for the American people. "Win the Long War", is the second of the five objectives, the others being Defend the Homeland, Promote Security, Deter Conflict and Win our Nation's War.³

Winning the "Long War" as written in the NDS 2008 is defined as:

"Winning against violent extremist movements and is prioritized as the central objective of the United States. The United States must defeat violent extremism as a threat to our way of life as a free and open society and foster an environment inhospitable to violent extremists and all those who support them. Victory requires us to apply all elements of national power in partnership with old allies and new partners. We face a clash of arms,

a war of ideas, and an assistance effort that will require patience and innovation. In concert with our partners, we must maintain a long-term commitment to undermining and reducing the sources of support for extremist groups, and to countering the ideological totalitarian messages they build upon.”⁴

In support of the Long War, an additional Combatant Command, Africa Command (AFRICOM), was established in 2008 under the Bush Administration to address National Security Strategy (NSS) priorities in Africa. The 2002 NSS addresses the requirements for a more focused strategic approach toward the continent of Africa: “In Africa, promise and opportunity sit side by side with disease, war, and desperate poverty. This threatens both a core value of the United States—preserving human dignity—and our strategic priority—combating global terror, now referred to as the “Long War.”⁵

In March 2008, the Commander of AFRICOM testified before Congress and outlined his plans for the continent. The AFRICOM Commander described his goals of developing “persistent, sustained engagement with African militaries and regional organizations.”⁶ The new Combatant Commander outlined the difficulties and challenges of the strategic environment in Africa in his testimony. Despite the difficulties, AFRICOM’s first Commander, General Kip Ward, argued for the command’s ability to create positive changes in the lives of millions of people on the continent. In his congressional testimony, General Ward discussed many important issues such as the political geography, regional issues, crimes and trends, and the trafficking of drugs and humans. During testimony the AFRICOM Commander discussed the importance of the political geography of Africa, the richness of the human capital and that African states remain fragile because of several issues to include endemic and pandemic health related problems.⁷

Like many of the combatant commands, AFRICOM’s Theater Security Cooperation (TSC) plans address security and health related issues within the command’s Area of

Responsibility. The former AFRICOM Combatant Commander General Ward's testimony to congress addresses TSC:

"Theater Security Cooperation revolves around programs that are developed to promote security through actively engaging in a country in order to build relationships, promote common interests, and enhance partnership capabilities for providing safe and secure environments. The cooperative efforts provide an opportunity for peacetime and contingency access, improving information sharing, and developing partnerships in support of U.S. foreign policy objectives. Providing training and equipment through TSC prepares African forces to better address shared challenges, strengthens legitimate sovereign governments, and makes less likely any U.S. requirement to conduct operations directly."⁸

U.S. Marine Forces Africa (U.S. MARFORAF), a Service Component of AFRICOM, is assigned missions to accomplish the AFRICOM TSC objectives, but the command is organized as a headquarters and therefore has no forces assigned. The Marine capability that arrived at U.S. Marine Forces Africa to accomplish AFRICOM's TSC objectives was initially given the name of Security Cooperation Team, now referred to as a Security Cooperation Task Force, Detachment, or Team appropriately as of January 4, 2011 (MARADMIN 005/11).⁹

The SC Team consists of well-trained Marines, mostly infantry, a couple of logisticians and a few administrative Marines. The medical capability assigned to the initial SC Team at U.S. Marine Forces Africa consisted of two Fleet Marine Force (FMF) Hospital Corpsmen, one First Class Petty Officer and one Second Class Petty Officer. Neither of the two corpsmen were Independent Duty Corpsman (IDC), a much higher medical skill set level than a general duty corpsmen. The capability of the IDC will be addressed later in this paper. The Hospital Corpsmen assigned to the SC Team were billeted as medical trainers for the SC Team. Therefore, the duties of the corpsmen were consistent with the other Marines assigned to the team, training African partners. Specifically, the corpsmen assigned had the role of training African medics to support the African military in countries throughout sub-Saharan Africa.

Though assigned as medical trainers on the SC Team, the corpsmen became inherently more responsible for the medical care of the SC Team because of the skill sets the corpsmen presumably possessed.

This paper is not intended to discredit the medical capability of the two corpsmen assigned to the initial U.S. Marine Forces Africa SC Team. This paper is only intended to highlight the environmental risks of sub-Saharan Africa countries from a health related standpoint and present a conclusion with recommendations for future SC Team medical support. The SC Teams conducting security cooperation activities in Africa require more than a general duty corpsmen or Independent Duty Corpsman (IDC) as a stand-alone medical capability because general duty or IDCs are not equipped medically or trained sufficiently to handle severe endemic tropical medical encounters Marines may face while operating in sub-Saharan Africa.

AFRICA: THE MEDICAL OPERATIONAL ENVIRONMENT

The operating environment of many of the sub-Saharan countries can easily be interpreted as austere. Most people associate Africa with high temperatures, but there are many hidden health related dangers that would escape the untrained eye and potentially lead to one's death if not properly identified, diagnosed and treated. Marines conducting Security Cooperation Activities in many of the sub-Saharan African countries will face a plethora of medical dangers and without the correct medical support capability attached, the hidden medical dangers Marines can encounter may go undiagnosed or misdiagnosed, creating the potential for fatal or permanently debilitating consequences.

Most countries in sub-Saharan Africa have no access to good drinking water. Most of the streams in Africa are full of water-borne diseases such as river blindness, sleeping sickness, diarrhea, cholera, typhoid, and other water based diseases like guinea worm and Bilharzias.

Malaria kills people in record numbers in Sub-Saharan African countries such as Ghana, Nigeria, Senegal, Gambia, Guinea, Sierra Leon, Liberia, Ivory Coast, and Togo. Guinea worm disease is a major health problem in Ghana and Burkina Faso. Due to water scarcity in certain parts of Northern and Eastern Africa, most village people in these areas suffer from water-scarce diseases like trachoma and scabies.¹⁰

The environment in many of the sub-Saharan African countries creates major health related challenges that requires medical planning and clinical attention. Protecting the forces, teams or detachments medically is paramount if objectives of the SC Team are to be achieved. Protecting the forces can be established by instituting a comprehensive Force Health Protection (FHP) program. The Health Services doctrine, Joint Publication 4-02 defines FHP as:

“All measures taken by commanders, leaders, individual Service members, and the Military Health System to promote, improve, or conserve the mental and physical well-being of Service members across the range of military operations. These measures enable a healthy and fit force, prevent injury and illness, and protect the force from health hazards. Methods to prevent disease are best applied synergistically. Sanitation practices, waste management, pest and vector control are crucial to protection from disease.”¹¹

A comprehensive Force Health Protection program is not just a program for protecting the forces while on deployment. FHP includes protecting the forces by instituting medical guidelines of protecting the forces long before a deployment, during a deployment, and long after the deployment is completed.

U.S. AFRICOM's FHP deployment and travel guidance outlines that FHP provides a conceptual framework for optimizing health readiness and protecting DoD personnel from occupational and environmental hazards associated with deployment and military service.

SC Teams operating in Africa face health related environmental conditions in sub-Saharan African countries that can affect the overall readiness and capability of the personnel deployed. Protecting the force from Disease, Non-Battle Injuries (DNBI) or diseases and

injuries not related to combat, is a major concern for the SC Teams operating in Africa because diseases degrade the capability of the force as a whole, and many of the diseases requires the individual to be medically evacuated at a great cost. Protecting the force from DNBIs is not just a medical function; it is the responsibility from the Commander down. Compliance with FHP procedures is an effort that all military personnel operating in areas where the health risks are the greatest, must adhere to if assigned missions are to be successful. Managing a successful FHP program and protecting the forces from endemic diseases in Africa is a constant effort of monitoring health, applying preventative medicine measures, identifying threats, and reacting to the threats which can endanger the health of deploying forces. The right medical capability and skill sets in support of the SC Teams are imperative to ensure the men and women deployed to Africa are successful in completing the mission assigned.

DETERMINING THE CORRECT HEALTH SERVICE SUPPORT (HSS) CAPABILITY FOR THE SP MAGTF (SECURITY COOPERATION) TEAMS OPERATING IN AFRICA.

Medical planners must exam all of the factors that can threaten the health of the force conducting missions; and determining the right Health Service Support when the operational medical environment is not comprehensively understood can be challenging at best. Sub-Saharan countries present many difficult Health Service Support medical planning challenges due to poor environmental conditions, lack of state-of-the art Host Nation medical facilities and the distances between medical evacuation nodes. Additionally, the size of the force and the mission of the forces conducting activities is also an important factor in determining the right Health Service Support capability assigned to the forces.

By design, SC Teams operating in Africa have small footprints. A small footprint is aligned with Deputy Commander of AFRICOM, Admiral Moeller's comments in the "The Truth

About AFRICOM” article of July 21, 2010. In a *Foreign Policy* interview, Admiral Moeller stated in Lesson 3-Keep our footprint in Africa limited. “We have also been accused of looking to establish military bases across the continent. This was false when the rumors arose at the time of AFRICOM’s creation and remains false today.” Admiral Moeller also went on to say, “Our footprint in Africa remains purposefully limited.”¹³

A limited footprint in Africa presents medical planning challenges because a robust Health Services Detachment is just not possible. Medical planners do not have the luxury of establishing a robust Health Service Support Detachment with all the capabilities that range from a General Medical Officer (GMO)/Physician, preventative medicine technicians to an administrative corpsmen; therefore, careful consideration must be taken to ensure the right medical capability is assigned to properly support the small foot print of SC Teams operating in the austere environments in Africa.

When conducting medical planning for the SC Teams operating in Africa, the medical planner must determine the correct medical composition that is best suited for the environment and conditions the SC Team may encounter medically. The Joint Publication 4-02, *Health Service Support*, Chapter III, presents fourteen Health Service Support Planning lenses to look through when conducting medical planning. The entire fourteen planning factors are taken into consideration when planning for a major campaign. The fourteen Health Service Support Planning considerations are:

1. Threat
2. Intelligence
3. Patient Movement
4. Patient Movement Items
5. Clinical Capabilities and Health Service Logistic Support
6. Preventative Medicine and Health Surveillance
7. Prevention of Stress Casualties
8. Mass Casualty Situations

9. Veterinary Service
10. Dental Service
11. Pharmacy Service
12. Host-Nation Support
13. HSS for U.S. POWs and Detained Personnel
14. HSS for Enemy Prisoners of War

For the purpose of this paper, a minimum of five of the Health Service Support planning considerations are needed to determine the right medical requirement to support a Security Cooperation Team operating in Africa. Utilizing all fourteen of the medical planning considerations annotated above are only needed during major campaign planning, and any one of the planning considerations can be added or deleted as planning factors as the situation or mission dictates. The five Health Service Support considerations this paper will exam to determine the correct medical capability as defined in the Joint Publication 4-02, *Health Service Support*, will be the Threat, Medical Intelligence, Preventive Medicine and Health Surveillance, Host Nation Support, and Clinical Capabilities.

Threat. A threat is a composite of ongoing or potential adversary actions; occupational, environmental, geographical, and meteorological conditions or endemic diseases which can reduce the effectiveness of the force through wounds, injuries, or illness.¹⁴ Understanding the threats is one of the filters a medical planner looks through to establish the requirements for recommending a capability to mitigate the possible medical threats a SC Team may encounter. There are many ways of determining the threat sub-Saharan African countries present. The open source way is by data mining from the Department of State, World Health Organization, and Center for Diseases Yellow Travel Book, or reviewing the Armed Forces Medical Intelligence (UNCLASSIFIED) website.

Another option to gain situational awareness of the environment through professional evaluation is to request the assistance of the Environmental Preventive Medicine Units (EPMUs)

located throughout the world. The EPMUs are a valuable and expert resource that can provide disease surveillance, evaluate endemic disease trends, and provide advice to mitigate and/or eliminate the sources of mission-degrading events. The type of skill sets organic to the EPMUs is not a taught skill set in depth for an Independent Duty Corpsman (IDC), and is a far reach for a General Duty / Fleet Marine Force Corpsman to accomplish. The skill sets at the EPMUs are scientific in nature and the skill sets take years to develop.

The health-related assessments provided by the EPMUs can be accessed by a General Duty Corpsmen, an IDC or a General Medical Officer/Physician, but the interpretation and true understanding of the information is better understood by a certified physician because of the scientific background a medical officer receives in training over a four year period of medical school, and through supplemental training such as Tropical Medicine Training. General Duty corpsmen receive twelve weeks of academics, which provides the General Duty Corpsman a limited understanding of medical data. The IDC receives one year of intense academics to help the IDC interpret data, but only to a limited extent. A board certified medical officer, because of the scientific training received in medical school, understands the information from a scientific approach and therefore, knows how to develop a regimental medical plan of responding to the data provided. The advantage a board certified medical officer has over an IDC or General Duty Corpsman is the ability to critically analyze the information provided with a holistic approach to the data. The corpsman, whether IDC or General Duty, is limited to having the assessment information without necessarily possessing the expertise to critically analyze the information appropriately and plan the appropriate response to mitigate the threats present in the environment. The IDC or General Duty Corpsman only lack the ability to conduct thorough medical analysis is due to lack of training and experience that a physician has acquired.

Medical Intelligence. Understanding the host nation medical threat begins with gathering the medical intelligence about a specific country to analyze the information and determine the requirements to properly protect the force medically. Medical Intelligence is defined as:

“The collection, evaluation, and analysis of information concerning the health threats and medical capabilities of foreign countries. Through proactive analysis and increased situational awareness, medical intelligence is an essential component in understanding the threat environment and formulating policy and response options.”¹⁵

Medical Planners do not have to conduct difficult in-depth medical planning data mining when researching the capabilities of a Host Nation’s Health Service Support capability. There are many other sources of medical intelligence from which planners can derive information and create Force Health Protection plans. The below excerpt published by the U.S. Embassy in Liberia is one of many examples of the sub-Saharan country travel advisories accessible on open sources. The conditions described illustrate why medical planning conducted the correct way will yield results of determining the right requirements and applying the correct medical capabilities assigned to the SC Teams. Looking at health service requirements vs. health service capabilities is the foundation of proper medical planning. The excerpt below published on the Department of State website presents a common Host Nation medical facility and health information theme as it relates to the countries in sub-Saharan Africa.

“MEDICAL FACILITIES AND HEALTH INFORMATION: Hospitals and medical facilities in Liberia are very poorly equipped and are incapable of providing many services. Emergency services comparable to those in the U.S. or Europe are non-existent, and the blood supply is unreliable and unsafe for transfusion. Americans with serious medical problems travel or are medically evacuated to the United States, Europe or South Africa. Medicines are scarce, often beyond expiration dates, and generally unavailable in most areas. As there is neither an effective garbage removal service nor a functioning sewer system, the level of sanitation throughout urban areas is very poor, which increases the potential for disease. Upper respiratory infections and diarrhea are common, as well as more serious diseases such as typhoid and malaria. All travelers to

Liberia must be vaccinated against yellow fever and should carry a supply of all prescription medication, including anti-malaria medication, adequate for their entire stay. A typhoid vaccination is also recommended.”¹⁶

Poorly equipped hospitals and medical facilities with non-existent emergency services like the ones outlined from the State Department in Liberia are common throughout sub-Saharan Africa. The lack of sophisticated medical care like the health care facilities provided in the United States only reinforces the requirement to have the right medical capability deployed with the skill sets to mitigate many, if not most, of the medical encounters the SC Team operating in Africa will face. Due to poor standards of health care in host nation sub-Saharan African hospitals, preventative measure protocols must be taken to provide the best Force Health Protection plans possible.

Preventative Medicine and Health Surveillance. Preventative medical measures are accomplished by implementing comprehensive preventative medicine and health surveillance programs. Preventive Medicine and Health Surveillance are defined as:

“Preventive Medicine: The anticipation, communication, prediction, identification, prevention, education, risk assessment, and control of communicable diseases, illnesses, and exposure to endemic, occupational, and environmental threats. These threats include non-battle injuries (NBIs), environmental and occupational exposures.”¹⁷

“Health Surveillance: The regular or repeated collection, analysis, archiving, interpretation, and distribution of health-related data used for monitoring the health of a population or of individuals, and for intervening in a timely manner to prevent, treat, or control the occurrence of disease or injury.”¹⁸

When evaluating the skill sets of an Independent Duty Corpsman (Table 1), the skill sets and training presents that IDCs have the capability to conduct the functions of a comprehensive preventative medicine and health surveillance program, but with limitations. Preventative Medicine Technicians (PMTs) have a more refined and detailed technical skill set of managing preventative medicine and health surveillance programs, but PMTs typically operate under the

supervision of a certified physician. The skill sets needed to conduct such programs far exceed the capabilities of a general duty corpsman because the general duty corpsman is only provided introductory training to such technical programs of preventative medicine and surveillance programs. The IDC and Preventative Medicine Technicians through training maintain the technical skill sets to conduct preventative medicine and surveillance programs, but both lack the in-depth analytical and scientific training of a physician with Tropical Medicine training. Physicians with tropical medicine training are more versed in evaluating the data from surveillance monitoring and therefore are better trained to build preventative treatment regimens by employing a holistic approach to enhancing the preventative and health surveillance programs.

IDCs are an invaluable asset in the preventative medicine field of protecting an SC Team operating in Africa, and the contributory efforts of an IDC conducting health surveillance under the management of a certified clinician makes the IDC a medical enhancement capability to the clinical skill sets of a physician. An IDC in conjunction with a Preventative Medicine Technician creates a medical force multiplier for SC Teams operating in Africa. Comprehensive Preventative Medicine and Health Surveillance program with physician oversight is the key to a successful deployment of the forces in Africa medically.

IDCs and Preventative Medicine Technicians are invaluable medical capabilities that can oversee and manage the pre-deployment, deployment, and post-deployment health assessments of the forces. Together, these two skill sets are a key capability to keeping the forces deployed in sub-Saharan countries free of diseases. Even though both skill sets of an IDC and Preventive Medicine Technician create a positive marginal difference in maintaining the health of the force, neither can replace the professional clinical skill sets of a physician. Sub-Saharan countries

have endemic diseases that require the oversight and skill sets of evaluation and diagnoses of a board certified clinical physician.

Host Nation Support. Adequate health care Host-Nation Support (HNS) is an important variable when determining the right capability to deploy with forces operating in foreign countries. If a Host Nation country has a health care system that is comparable to United States standards, the requirements to send a physician may not be warranted because an IDC or General Duty Corpsman maybe more than adequate medical support.

Adequate HN medical facilities can be a significant force multiplier as long as the health care facility is equivalent to US standards.²⁰ In Africa, most sub-Saharan HN medical capabilities lack adequate standards of care that U.S. military personnel are accustomed. According to the World Health Report by Dr. Luis Gomes Sambo, Regional Director WHO – Regional Office for Africa, the vast majority of people living in Africa have yet to benefit from advances in medical research and public health.²¹ The result is an immense burden of death and disease that is devastating for African societies. People get sick and die in many cases because the systems for disease prevention and control are not in place or do not function properly.²²

Host Nation Support is always considered when determining the right medical capability to support the forces conducting missions abroad. In most cases in sub-Saharan Africa, the Host Nation hospitals are not adequate for medical care and therefore, the requirement for a board certified physician is imperative to provide the clinical oversight and care military members may require. In some countries, the Host Nation health care system works well enough to be utilized as a short or long term care option if the care required exceeds the capabilities of a General Duty Corpsman or an IDC. Most, if not all, countries in Sub-Saharan Africa have sub-standard health

care facilities that are not options as a short or long term care facility in the event a Marine from a SC Team requires hospitalization under the care of a physician.

In the event a SC Team member contracts a disease or injury in Africa and the diagnosis and treatment is outside the scope and capabilities of a General Duty Corpsman or an IDC, the typical response is to send the Marine to the nearest Host Nation hospital for long term or specialized health care, pending a MEDEVAC if required. The option to send a SC Team member to a hospital that has been categorized as sub-standard to U.S. standards has risks associated with it, such as common post-surgical infections due to unsanitary health care conditions, or receiving untested blood products during surgery. These risks can be mitigated by assigning a board certified medical officer to the SC Team. A board certified physician assigned to the SC Team significantly reduces the need to access a Host Nation hospital physician for additional health care, and reduces the potential health risks associated with sending a team member to a sub-standard Host Nation hospital with poor standards of care.

Clinical Capabilities. When Host Nation health care is inadequate, medical planners must determine the correct clinical capability to deploy with the force. Clinical capabilities are defined as the necessary medical capability to provide care for the expected number and types of patients in the theater.²³ The rubber meets the road in this Health Service Support planning consideration. Once the requirements are identified by evaluating and analyzing the environmental threat, medical intelligence, Host Nation support, and FHP requirements, medical planners must evaluate the medical capabilities that are available to provide the best course of action possible to medically protect the SC Teams operating in Africa. As previously stated, Africa presents many challenges medically and therefore, the assignment of the best capable

medical asset is imperative to the success of the SC Team accomplishing the African missions assigned by the Combatant Commander.

In Table 1, four medical skill sets are identified that can provide Health Service Support, and though each of the skill sets are unique by themselves, together they create a medical force multiplier that protects the SC Team from the inherent dangers in sub-Saharan Africa. The SC Team operating in sub-Saharan Africa on occasion may be small in size, but the size of the SC Team is not a medical planning factor when determining the correct medical capability against the requirements. Due to the inherent medical dangers sub-Saharan countries a SC Team will operate in, the combinations of all the skill sets in Table 1, collectively are imperative because they complement each other. If all four of the skill sets are not feasible, at a minimum, a physician is the key to safe-guarding the SC Team medically.

The skill sets of an IDC, Preventive Medicine Technician, or a general duty corpsman alone do not provide the necessary medical capability required to protect the forces deployed comprehensively, and it does not set the conditions for a complete Force Health Protection Program for Marines operating in Africa. If Marines continue to operate in the austere environment of Africa, it is imperative that appropriate clinical oversight with the right skill set be deployed with the Marines conducting Security Cooperation Activities. The last thing the Marines need is an incident similar to the Navy Seabee dying from malaria in Liberia.²⁴ A physician's clinical skills create a medical force multiplying difference and despite the fact physicians are a high demand, low density capability, medical planners must consider the priority of effort as where the best skill sets are applied.

In 2010, Marines and Sailors conducted Security Cooperation Activities in the country of Liberia and a Seabee conducting construction efforts presented signs and symptoms typically

associated with dehydration to the young corpsman assigned to the unit. The country of Liberia contains the silent dangers of endemic diseases like most countries in sub-Saharan Africa, most notably, malaria. The type of malaria endemic to Liberia is the worst kind, P-falciparum. Malaria has a massive impact on human health; it is the world's second biggest killer after tuberculosis. Around 300 million clinical cases occur each year resulting in between 1.5 - 2.7 million deaths annually, the majority of which are in sub-Saharan Africa. It is estimated that 3,000 children under the age of five years fall victim to malaria each day. Around 40% of the world's population is at risk.²⁵ The silent killer in sub-Saharan Africa contributed to the death of the Seabee, but ultimately, the corpsman assigned to provide medical support was not adequately prepared to handle the endemic tropical diseases associated with sub-Saharan Africa.

After showing symptoms, the sailor was misdiagnosed by his unit's corpsman — a former dental technician. After the Seabee was diagnosed and lay extremely ill in a small Liberian hospital that lacked even food and water for patients, sadly, the young sailor eventually died of his illness. The lone medical corpsman assigned Seabee unit on site in Liberia was untrained in malaria or tropical medicine.²⁶ The corpsman assigned to the Seabee unit was untrained in tropical medicine because the tropical medicine course is limited to board certified physicians.

Corpsmen learn basic skill sets in acute care, which entails sore throats, minor trauma, and basic first aid. The corpsman involved did not have a chance of diagnosing and defeating the silent killer endemic to sub-Saharan African countries. A certified physician with tropical medicine training could have prevented the death of the Seabee, because unlike the under qualified basic General Duty Corpsman that was assigned to the Seabee unit, a physician has medical analytical and professional scientific skills sets in medicine that leads clinicians to

investigate the symptoms scientifically and produce results to treat the problem and resolve the symptoms.

CONCLUSION. This paper is not presented to discredit the great efforts of an IDC, Preventative Medicine Technician, or a general duty corpsman. History has shown that general duty corpsman and IDCs have proven themselves over and over again with efforts through amazing feats in war, humanitarian assistance, and in peace time. This paper is designed to highlight the importance of the right capability supporting the SC Teams operating on the continent of Africa.

General duty corpsman, Preventative Medicine Technicians, and Independent Duty Corpsman are truly force multipliers as medical forces, but the skill sets of the corpsmen are not the correct clinical Health Service Support asset for the SC Team operating in Africa. The hidden dangers that skirt the sub-Saharan countries of Africa are no match for the under credentialed care provider. A credentialed physician with tropical medicine training is the correct clinical capability the SC Team requires to be successful in accomplishing the goals and objectives of the SC Teams operating in Africa.

Security Cooperation efforts in Africa require an enduring and capable medical presence, and a physician with tropical medicine training is the key to success. An IDC, Preventive Medicine Technician, or general duty Fleet Marine Force corpsmen is a tremendous compliment to the additional Health Services a clinician needs, but these Health Service Support assets alone are not the answers to medical success, and as a matter of fact, alone, they are set up for failure. A board certified physician possesses the necessary foundation of medical expertise because physicians develop intuitive and professional skills of treating symptoms of unknown origins through extensive training. Given their more extensive experience, physicians lean toward

identifying the problem and treating it, as opposed to just treating the symptoms of an ill or wounded Marine. An unqualified medical provider treating just the symptoms of a Marine in Africa as opposed to properly identifying the problem and treating it accordingly may jeopardize the well-being of those the care provider was sent to protect.

Sub-Saharan countries present many dangerous health related diseases that can affect the overall health of Security Cooperation Teams (SC Teams) operating in the region. Therefore, a board certified physician with tropical medicine training is the appropriate clinical competent medical authority that should be assigned to support the SC Team, and preserve the combat effectiveness of the team.

General Duty Corpsmen and Independent Duty Corpsmen are quite capable of providing exceptional medical coverage in environments without the existence of deadly endemic diseases that are inherent to the sub-Saharan countries in Africa. African Security Cooperation Activities for small teams present a whole different world of medical planning and estimating adequate medical coverage. Additionally, because of the inherent endemic diseases of sub-Saharan Africa, the level of medical coverage should not be based solely on the ratios of personnel. When a small contingency of forces deploy to Africa to conduct Security Cooperation Activities, the requirements for proper medical support should be filtered through the five medical planning considerations discussed in the paper. A small deployable force does not constitute sending a medical capability only consisting of a General Duty Corpsman or an IDC; the five planning factors must be evaluated in depth to ensure the right capability is deployed. The sub-Saharan African environment alone constitutes the need for a medically scientific approach, and that comes in the form of a physician with tropical medicine clinical capabilities. A physician with

tropical medicine skills is the correct capability to medically support forces in sub-Saharan Africa despite the size of the force.

The observations outlined in this paper highlight the importance of having the right medical capability with the appropriate clinical skill sets to adequately support the SC Teams operating in sub-Saharan Africa. If the SC Teams are to be successful in accomplishing the AFRICOM Combatant Commander's TSC objectives, medical support must be at a level of competency which is conducive to the sub-Saharan environment. The following recommendations are provided as a baseline for consideration to adequately support the SC Teams operating in sub-Saharan Africa:

Plan A. Develop an AFRICOM Directive that mandates a medical force structure which includes a board certified physician in support of the SC Team operating in sub-Saharan Africa. If a board certified physician is not organic to the Marine unit task organized to staff the Marine SCT Team, then Marine Forces Africa (MARFORAF), as the Service Component, will initiate the process of utilizing the Global Force Management (GFM) process through the Chain of Command to obtain a board certified physician from another service provider. Additionally, the AFRICOM Directive should mandate the requirement for the required physician to attend an approved tropical medicine course prior to deploying with the MARFORAF SC Team. The Combatant Commander designates funding to allow the physician to attend the tropical medicine training.

Plan B. Under the same AFRICOM Directive addressed in Plan A, the Directive should also address; If all available administrative processes have been exhausted to acquire a physician, and a physician is not possible to staff the MARFORAF SC Team for the missions in sub-Saharan Africa, the AFRICOM Directive dictates that an IDC with a Preventative Medicine

Technician at a minimum will be requested to support the SC Team in Africa. If an IDC and Preventative Medicine Technician is the only resort to support the SC Team, the AFRICOM Directive addresses the COCOM taking lead for coordinated contractual medical support through the United States Embassy for clinical oversight, additional care and laboratory testing as needed. The medical contract support builds redundancy into the medical process by providing a certified clinician or nurse practitioner familiar with the endemic diseases and health care processes of the region they operate in. Reimbursement to the regional Embassy for all medical encounters and or assistance will be coordinated through AFRICOM.

The operating environments of sub-Saharan countries present many medical challenges that are not going away anytime soon. If the SC Teams are to continue executing AFRICOM's TSC objectives in Africa, then it is imperative the right medical capabilities are assigned to protect the forces. Incidents of Marines and Sailors dying from endemic diseases in Africa can be avoided by institutionalizing policies and creating a commander's directive that outlines the medical capability deployment guidance outlined in plan A and B of this paper. Plan A and B does not eliminate the failure of Marine or Sailor choosing not to comply with appropriate and proper Force Health Protection measures, but it significantly reduces the risks of death from inherent African endemic disease due to the clinical skill capabilities set in place to identify and treat the illness immediately, returning the Marine or Sailor back to full duty.

Table of Medical Capabilities

Medical Asset	Medical Capability Description	Training
Fleet Marine Force / General Duty Corpsman	Provides medical services for personnel in field units. Provides technical and administrative assistance to support the mission and functions of Navy and Marine Corps field units. Maintains organizational level AMAL's. Assists in the procurement and distribution of supplies and equipment for field use and combat areas. Maintains field treatment facilities. Renders first aid and emergency medical treatment to unit personnel/combatants. Coordinates and performs medical evacuation procedures. Ensures observance of field sanitary measures and preventive measures in specialized warfare. Conducts first aid and health education training programs.	14 weeks at Hospital Corpsman School and 8 weeks at Field Medical Service School
Preventive Medicine Technician	Assists Medical Department Officers in the performance of Preventive Medicine and Occupational Health Programs for Navy and Marine Corps forces ashore and afloat. Performs inspections and surveys of food and food service facilities, berthing spaces, barber and beauty shops, child care facilities, recreational facilities, swimming pools, potable water systems, solid waste and waste water disposal sites and systems, vehicles, and transport containers. Conducts bacteriological analysis of food, water, and ice samples. Conducts epidemiological investigations and reporting (Disease Alert Report). Applies statistical methods to human mortality, morbidity, and demographic studies. Conducts disease vector (insects, rodents, parasites, and other pests) control programs (surveys, identification, and pesticide application and other control measures). Is proficient in all aspects of field sanitation (water and food service sanitation, waste disposal, and vector control).	14 weeks of basic Hospital Corpsman School and 6 months of preventative medicine training
Independent Duty Corpsman	Serves as the Medical Department Representative (MDR) aboard surface ships, with the units of the Fleet Marine Force, and at various isolated duty stations ashore independent of a medical officer. Performs patient care and associated shipboard administrative and logistical duties. Performs diagnostic procedures, advanced first aid, basic life support, nursing procedures, minor surgery, basic clinical laboratory procedures, and other routine and	14 weeks of basic Hospital Corpsman School and 1 year of advanced clinical studies

	<p>emergency health care. Conducts and direct preventive medicine and industrial health surveillance programs. Provides for health education to junior medical and all nonmedical personnel. Conducts disease vector (insects, rodents, parasites, and other pests) control programs (surveys, identification, and pesticide application and other control measures). Is proficient in all aspects of field sanitation (water and food service sanitation, waste disposal, and vector control).</p>	
General Medical Officer / Physician	<p>GMO's are the civilian counterpart to the general practitioner (GP). They have completed and internship and are licensed physician. They are primary care physicians for operational units. GMO's provide primary care to active duty service members and provides medical functions as a gatekeeper for higher levels of care. They are responsible for maintaining the health and readiness of their unit to include assuring immunizations and routine exams are up to date. They have an important leadership role because they advise their command on medical issues and sometimes act as medical department head.</p> <p>Note: If a Medical Officer attended the Navy Medicine Training Command Tropical Medicine Course:</p> <p>The course content targets the knowledge base required to work in developing areas delivering care, and surveying and assessing risk to include meaningful interaction with referral preventive medicine and research laboratory resources. The course content domains are:</p> <ul style="list-style-type: none"> • Malaria • Operational, Travel, and Field Medicine, and Public Health • Bacteriology and Mycology • Virology • Parasitology • Laboratory; and, • Clinical Correlations and Summaries. 	<p>4 years at a credentialed Medical School.</p> <p>3 weeks or 100 hours of Tropical Medicine Course</p>

Table 1 (Medical Capabilities)

Definitions

Bilharziasis: a parasite infection by a trematode worm acquired from infested water. Also known as schistosomiasis. Species which live in man can produce liver, bladder, and gastrointestinal problems. Species of the schistosomiasis parasite which cannot live in man cause swimmer's itch. (Meridian).

Security Cooperation — All Department of Defense interactions with foreign defense establishments to build defense relationships that promote specific US security interests, develop allied and friendly military capabilities for self-defense and multinational operations, and provide US forces with peacetime and contingency access to a host nation. (JP 3-22)¹

Security Cooperation Activity — Military activity that involves other nations and is intended to shape the operational environment in peacetime. Activities include programs and exercises that the US military conducts with other nations to improve mutual understanding and improve interoperability with treaty partners or potential coalition partners. They are designed to support a combatant commander's theater strategy as articulated in the theater security cooperation plan. (JP 3-0)²

Special Purpose Marine Air-Ground Task Force (SP MAGTF) — A Marine air-ground task force organized, trained, and equipped with narrowly focused capabilities. It is designed to accomplish a specific mission, often of limited scope and duration. It may be any size, but normally it is a relatively small force — the size of a Marine expeditionary unit or smaller. (JP 1-02).³

Trachoma - Trachoma is the result of infection of the eye with *Chlamydia trachomatis*. Infection spreads from person to person, and is frequently passed from child to child and from child to mother, especially where there are shortages of water, numerous flies, and crowded living conditions. Infection often begins during infancy or childhood and can become chronic. If left untreated, the infection eventually causes the eyelid to turn inwards, which in turn causes the eyelashes to rub on the eyeball, resulting in intense pain and scarring of the front of the eye. This ultimately leads to irreversible blindness, typically between 30 and 40 years of age. (WHO).

¹ Joint Publication 3-22. Foreign Internal Defense. 2010.

² Joint Publication 3-0. *Joint Operations*. 2010.

³ Joint Publication 1-02. *Department of Defense Dictionary of Military and Associated Terms*. 2011.

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